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On several new or poorly-known Oriental Paradoxosomatidae (Diplopoda: Polydesmida), XVIII

О нескольких новых или плохоизученных ориентальных Paradoxosomatidae (Diplopoda: Polydesmida), XVIII

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KEY WORDS: Diplopoda, Polydesmida, Paradoxosomatidae, taxonomy, new records, new species, Nepal, India, Indonesia, Vietnam, Tajikistan.

КЛЮЧЕВЫЕ СЛОВА: Diplopoda, Polydesmida, Paradoxosomatidae, таксономия, новые находки, новые виды, Непал, Индия, Индонезия, Вьетнам, Таджикистан.

ABSTRACT. This contribution is devoted to new records of a few known, and to descriptions of the following six new, species: *Substrongylosoma bifurcatum* sp.n., *S. exiguum* sp.n., *Pocockina schawalleri* sp.n., *Beronodesmoides longifemoratus* sp.n. and *Anoplodesmus spinosus* sp.n., all from Nepal, as well as *Dajakina kompantsevi* sp.n., from Sumatra, Indonesia.

РЕЗЮМЕ. Данное сообщение посвящено находкам нескольких известных, а также описаниям следующих шести новых видов: *Substrongylosoma bifurcatum* sp.n., *S. exiguum* sp.n., *Pocockina schawalleri* sp.n., *Beronodesmoides longifemoratus* sp.n. and *Anoplodesmus spinosus* sp.n., все из Непала, а также *Dajakina kompantsevi* sp.n., с Суматры (Индонезия).

Introduction

This paper is devoted to new records of a few known, as well as to descriptions of six new, species of paradoxosomatid millipedes, mainly from Nepal.

Material and methods

Most of the material is deposited in the collection of the the Zoological Museum, Moscow State University, Russia (ZMUM). Several samples have been returned or donated to the Natur-Museum Senckenberg (SMF), Frankfurt a.M., Germany, as indicated below.

Taxonomic part

Kronopolites swinhoei (Pocock, 1895)

MATERIAL. 1 ♀ (ZMUM ρ3045), China, Shaanxi Prov., Panda Area, Foping Nature Reserve, 33°45’N, 107°48’E, 20.IV-11.V.1999, leg. V. Siniaev & A. Plutenko.

REMARK. This is perhaps the most common and widespread native diplopod species in mainland China, including its Shaanxi Province [e.g. Golovatch, 2013].

Hedinomorpha bucharensis (Lohmander, 1933)

MATERIAL. 1 ♂, 1 ♀ (ZMUM ρ3046), Tajikistan, Khatlon Area, Khovaling Distr., opposite Alakosim Kishlak, 38°21. 560′N, 70°03.852′E, 1840 m a.s.l., 28.IV.2015; 1 ♀ (ZMUM ρ3047), Tajikistan, Khatlon Area, Khovaling Distr., Darai-Mukhton, near “Vose Museum”, 38°23.572′N, 69°57.910′E, 1580 m a.s.l., 28.IV. 2015; 1 ♂, 1 ♀, 3 juv. (ZMUM ρ3048), Tajikistan, Khatlon Area, Dagara Distr., E slope of Sanglogh (= Sanglok) Mt. Range, near Kolkot Kishlak, 38°15.489′N, 69°15.030′E, 1350 m a.s.l., 30.IV. 2015, all leg. Y. Marusik.

REMARK. This species is endemic to Tajikistan [Jeekel, 1988].

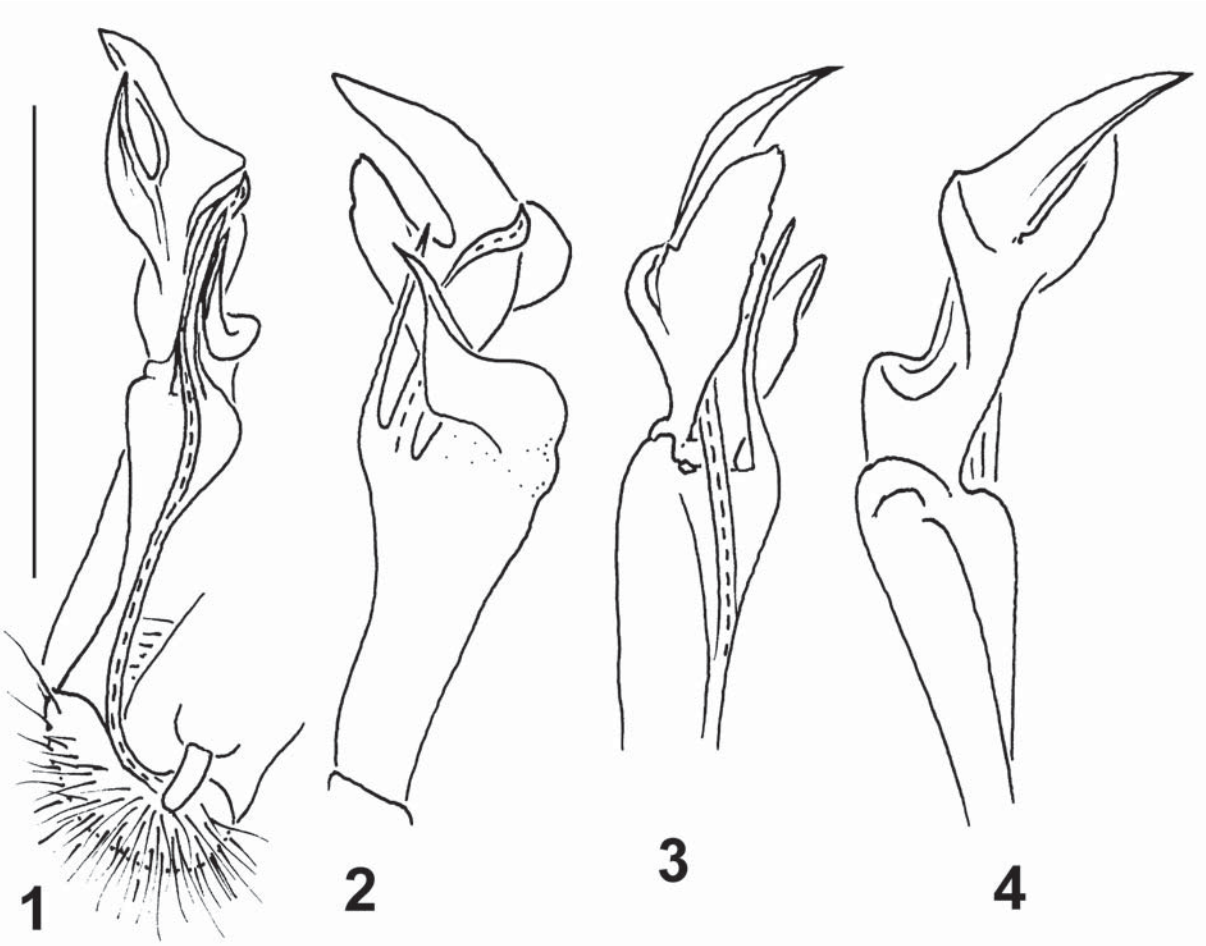
Delarthrum aberrans (Golovatch, 1996)
Figs 1–4.

MATERIAL. 3 ♂♂ (SMF), 1 ♂ (ZMUM ρ2644), Nepal, Ramechap Distr., Mohabir Khola E of Shivalaya, 2500–2600 m a.s.l., degraded mixed broadleaved montane forest with *Quercus*, *Rhododendron*, *Berberis*, *Rosa*, *Lonicera*, 6–7.05.1997, leg. W. Schawaller.

REMARKS. The above samples fully agree with the original description [Golovatch, 1996b], eventually representing near-topotypes. The gonopod structure is redepicted to document the species’ identity (Figs 1–4).

Delarthrum arunense (Golovatch, 1994)
Figs 5–9.

MATERIAL. 1 ♂ (ZMUM ρ2700), Nepal, Bhojpur Distr., valley NW of Phedi, 1900 m a.s.l., mixed broadleaved forest with *Alnus*, 26.05.1997, leg. W. Schawaller.



Figs 1–4. *Delarthrum aberrans* (Golovatch, 1996), ♂ from Mohabir Khola, right gonopod, mesal, dorsal, ventral and lateral views, respectively. Scale bar: 1.0 mm.

Рис. 1–4. *Delarthrum aberrans* (Golovatch, 1996), ♂ из Mohabir Khola, правый гоноподы, соответственно изеутри, сверху, снизу и сбоку. Масштаб: 1,0 мм.

REMARKS. The above sample nearly fully agrees with the original description [Golovatch, 1994]. The only notable difference concerns the slighly undulate gonopod tip (Figs 8, 9). New illustrations (Figs 5–9) are provided to document the identity of this species which appears to be rather widespread in eastern Nepal.

Delarthrum silvestre (Golovatch, 1994)

MATERIAL. 1 ♂, 3 ♀♀ (SMF), 1 ♂ (ZMUM ρ2642), Nepal, Solukhumbu Distr., above Bung, 2500–2200 m a.s.l., degraded broadleaved forest and bushes near village, 21.05.1997; 4 ♂♂, 1 ♀ (SMF), 1 ♂ (ZMUM ρ2643), Solukhumbu Distr., Hinku Drangka Khola bridge, 2000 m a.s.l., patches of riverine gallery vegetation, 18–19.05.1997; 1 ♂, 1 ♀ (SMF), Solukhumbu Distr., Junbesi to Ringmo, 2700–3000 m a.s.l., remnants of montane forest with *Abies* and *Tsuga*, 12.05.1997; 2 ♂♂ (SMF), Solukhumbu Distr., above Nunthala, 2500–2300 m a.s.l., mixed broadleaved montane forest, 13.05.1997; 4 ♂♂ (SMF), Solukhumbu Distr., Shibuche, 2700–2300 m a.s.l., open montane *Rhododendron* forest with *Magnolia*, 18.05.1997; 2 ♂♂, 1 ♀ (SMF), Solukhumbu Distr., Salpa Pass, 3400 m a.s.l., primary montane *Rhododendron* forest with *Abies*, 24.05.1997, all leg. W. Schawaller.

REMARK. The above samples fully agree with the original description [Golovatch, 1994]. This species appears to be quite widespread in eastern Nepal.

Anoplodesmus cylindricus (Carl, 1935)

MATERIAL. 2 ♂♂, 1 ♀ (SMF), Nepal, Ramechap Distr., Mohabir Khola E of Shivalaya, 2500–2600 m a.s.l., degraded mixed broadleaved montane forest with *Quercus*, *Rhododendron*, *Berberis*, *Rosa*, *Lonicera*, 6–7.05.1997; 1 ♂, 1 ♀ (SMF), Bhojpur Distr., valley NW of Phedi, 1900 m a.s.l., 26.05.1997, all leg. W. Schawaller.

REMARKS. The above samples fully agree with the original description [Carl, 1935] and subsequent redescriptions [Golovatch, 1984, 1990]. This species is the most widespread *Anoplodesmus* in Nepal [Golovatch, 1990], being also known from Sikkim and Darjeeling District, northern India [Carl, 1935; Golovatch, 1984].

Anoplodesmus martensi (Golovatch, 1990)

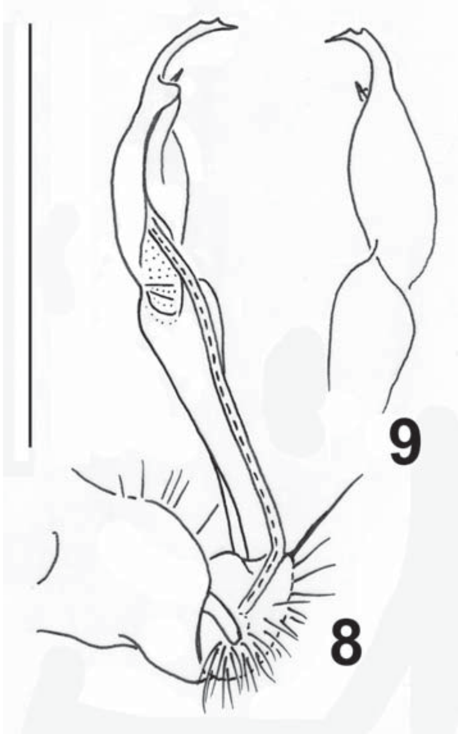
MATERIAL. 1 ♂ (SMF), Nepal, Solukhumbu Distr., Junbesi, 2700 m a.s.l., cultivated land with bushes near village, 11.05.1997, leg. W. Schawaller.

REMARKS. The above sample fully agrees with the original description [Golovatch, 1990]. This species is rather widespread in eastern Nepal.



Figs 5–7. *Delarthrum arunense* (Golovatch, 1994), ♂ from NW of Phedi. 5 — habitus, lateral view; 6, 7 —middle and posterior parts of body, respectively, dorsal views. Pictures by K. Makarov, taken not to scale.

Рис. 5–7. *Delarthrum arunense* (Golovatch, 1994), ♂ из СЗ Phedi. ♂. 5 — общий вид, сбоку; 6, 7 — соответственно средняя и задняя части тела, сверху. Фотографии К. Макарова, без масштаба.



Figs 8–9. *Delarthrum arunense* (Golovatch, 1994), ♂ from NW of Phedi, left gonopod, mesal and lateral views, respectively. Scale bar: 0.5 mm.

Рис. 8–9. *Delarthrum arunense* (Golovatch, 1994), ♂ из СЗ Phedi, левый гонопод, соответственно изнутри и сбоку. Масштаб: 0,5 мм.

Anoplodesmus solenophorus Nguyen, 2010

MATERIAL. 1 ♂, 3 ♀♀, 4 juv. (ZMUM ρ2707), Vietnam, Binh Phuoc Prov., Bu Gia Map National Park, 12°11′37″N, 107°12′21″E, 350–540 m, 10–24.04.2009, leg. D. Fedorenko.

REMARKS. The above sample fully agrees with the original description and represents strict topotypes [Nguyen, 2010].

Beronodesmus latispinosus Golovatch, 2015

MATERIAL. 1 ♂ (SMF), Nepal, Solukhumbu Distr., Hinku Drangka Khola bridge, 2000 m a.s.l., patches of riverine gallery vegetation, 18–19.05.1997, leg. W. Schawaller.

REMARKS. This species has just been described from several places in eastern Nepal [Golovatch, 2015]. The above new sample is thus a near-topotype.

Nedyopus dawydoffiae (Attems, 1953)

MATERIAL. 1 ♂, 1 j. (ZMUM ρ2708), Vietnam, Lam Dong Prov., 25 km NNW of Bao Loc, near Bao Loc, 11°43′27″N, 107°42′44″E, 800–1000 m, 6–20.04.2009; 1 ♂ (ZMUM ρ2709), Dak Lak Prov., Chu Yang Sin National Park, upper flow of Krong Kmar River, 12°23′48″N, 108°21′E, 1000 m, 19.03–2.04.2009, all leg. D. Fedorenko.

REMARKS. This rather large species with a characteristic cingulate pattern is presently known from several places in southern Vietnam [cf. Golovatch, 2009; Golovatch & Semenyuk, 2010].

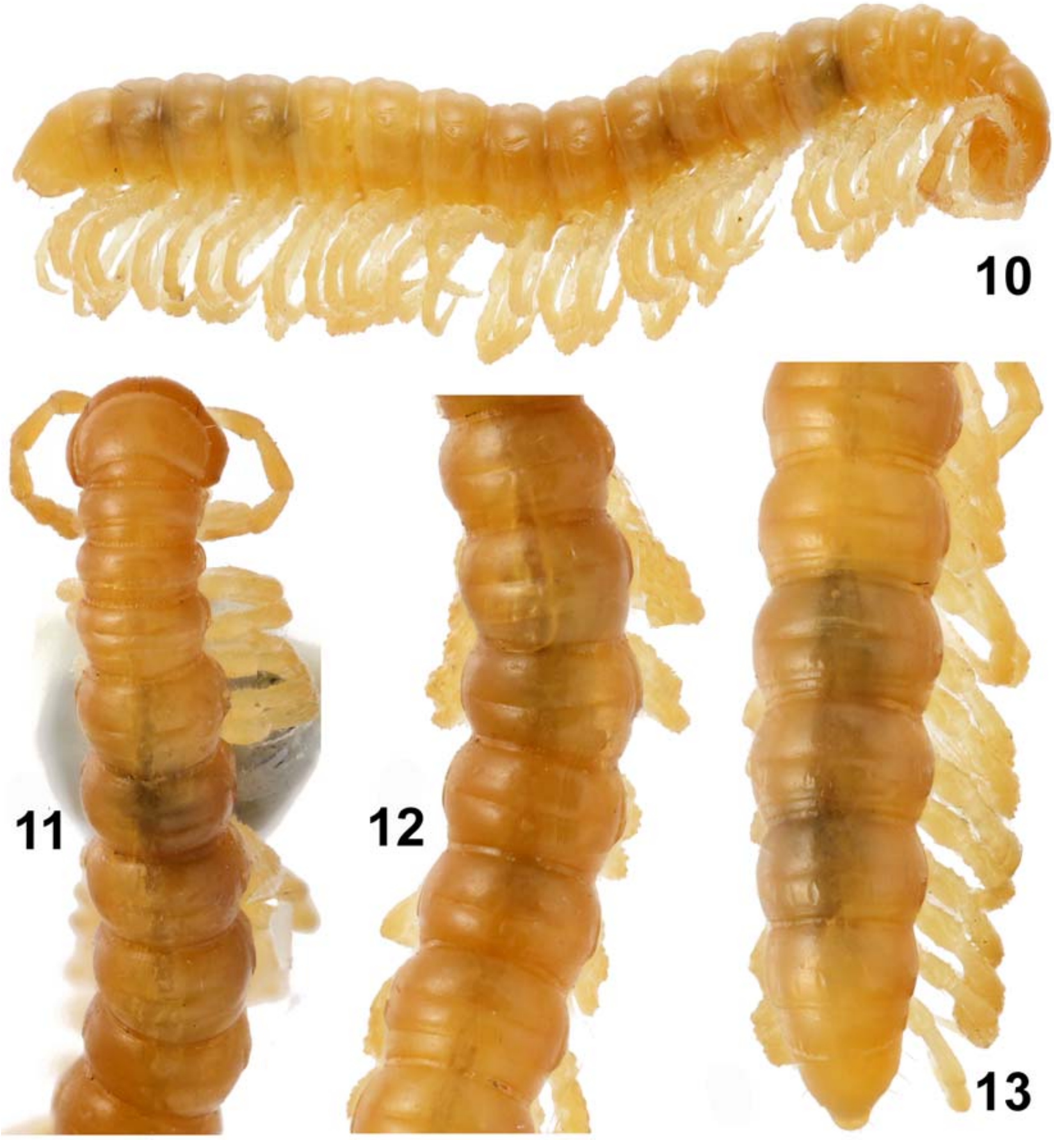
Touranella peculiaris Golovatch, 2009

MATERIAL. 2 ♂♂, 2 ♀♀ (ZMUM ρ2710), Vietnam, Lam Dong Prov., Bi Doup – Nui Ba Nature Reserve, near Lam Lanh, 12°10′44″N, 108°40′44″E, 26.04–10.05.2009, leg. D. Fedorenko.

REMARKS. The above samples fully agree with the original description and represent strict topotypes [Golovatch, 2009].

Substrongylosoma bifurcatum **sp.n.**
Figs 10–19.

HOLOTYPE ♂ (ZMUM ρ2699), Nepal, Solukhumbu Distr., Hinku Drangka Khola bridge, 2000 m a.s.l., patches of riverine gallery vegetation, 18–19.05.1997, leg. W. Schawaller.



Figs 10–13. *Substrongylosoma bifurcatum* sp.n., ♂ holotype. 10 — habitus, lateral view; 11–13 — anterior, middle and posterior parts of body, respectively, dorsal views. Pictures by K. Makarov, taken not to scale.

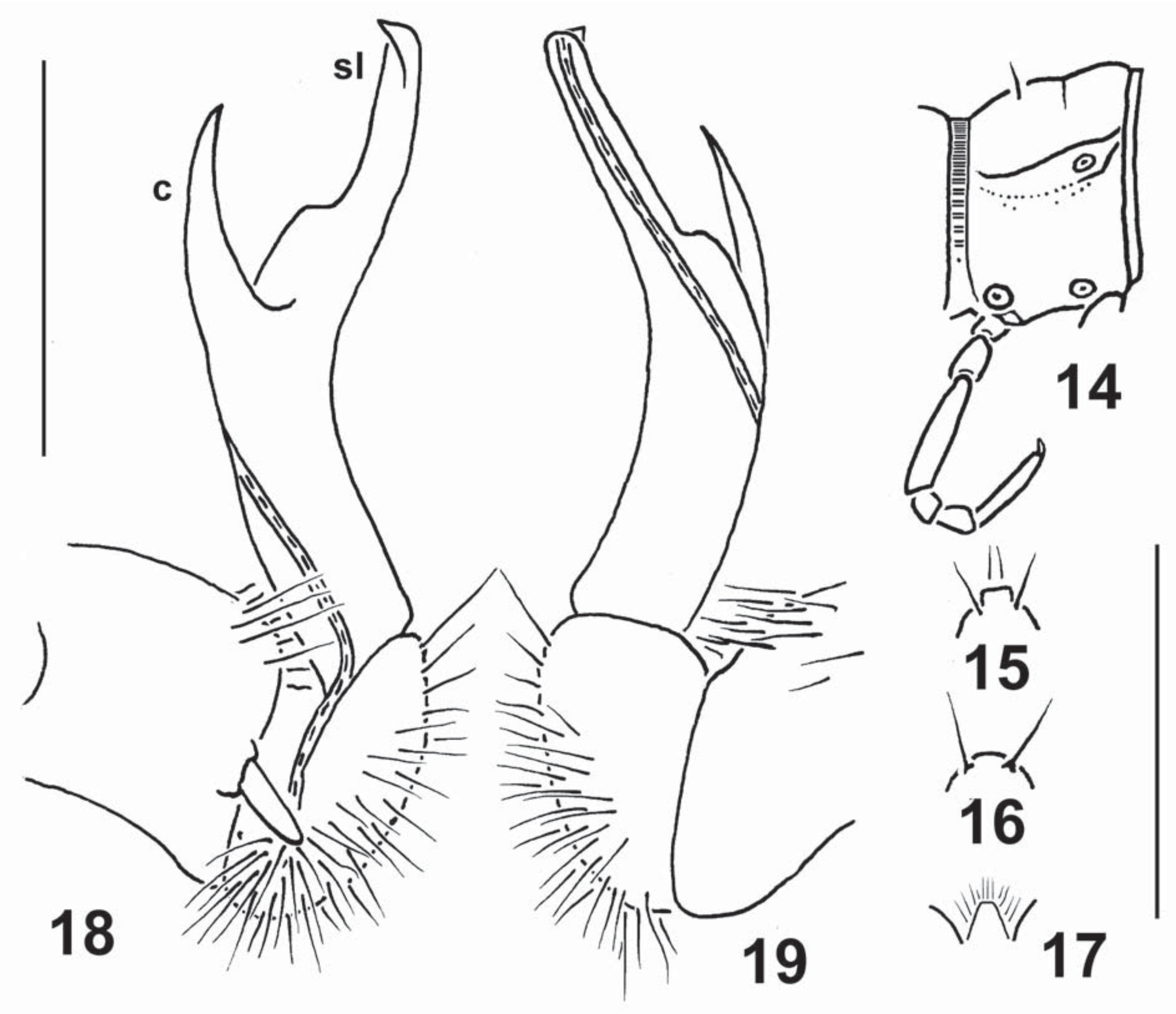
Рис. 10–13. *Substrongylosoma bifurcatum* sp.n., голотип ♂. 10 — общий вид, сбоку; 11–13 — соответственно передняя, средняя и задняя части тела, сверху. Фотографии К. Макарова, без масштаба.

DIAGNOSIS. Differs from congeners by the especially small size (length < 10 mm) and deeply bifurcate gonopod, in which process **c** is particularly prominent [see Golovatch, 1993].

NAME. To emphasize the deeply bifurcate gonopod; adjective.

DESCRIPTION. Length ca 9.5 mm, maximum width (on head) 0.8 mm, of midbody pro- and metazonae 0.5 and 0.7 mm, respectively (♂). General coloration in alcohol light yellow-brown, venter and legs slightly paler, antennomere 7 brown (Figs 10–13).

Body submoniliform (Figs 10–14). In width, segment 3 = 4 < 2 < collum = segments 5–16 < head; body gradually tapering starting with segment 17 (Figs 10–13). Clypeolabral region densely, vertigial region poorly, setose. Antennae poorly clavate, slender and long, not modified, slightly extending back behind segment 3 when stretched dorsally (♂); in length, antennomeres 2–6 > 1=7. Paraterga on collum broadly rounded (Fig. 10); postcollum paraterga set at about half of body height, very poorly developed, caudally likewise never projecting behind rear margin (Figs 10–14). Lateral calluses on paraterga very narrow in dorsal view, smooth, in lateral view considerably thicker on pore-bearing segments, thinner in poreless ones, very clearly delimited by a complete deep sulcus dorsally and, to a lesser degree, ventrally in caudal $^{1}/_{3}$ only. Ozopores lateral, each lying inside a shallow ovoid groove ca ¼ of callus length in front of caudal corner (Figs 10, 14). Body surface smooth and shining, sometimes faintly



Figs 14–19. *Substrongylosoma bifurcatum* sp.n., ♂ holotype. 14 — left half of metazonite 10, lateral view; 15 — epiproct, dorsal view; 16 — hypoproct, ventral view; 17— sternal lobe between coxae 4, ventral view; 18, 19 — left gonopod, mesal and lateral views, respectively. Scale bars: 1.0 (14–17) & 0.2 mm (18, 19). Designations explained in text.

Рис. 14–19. *Substrongylosoma bifurcatum* sp.n., голотип ♂. 14 — левая половина метазонита 10, сбоку; 15 — эпипрокт, сверху; 16 — гипопрокт, снизу; 17 — стернальная пластина между тазиками 4, снизу; 18, 19 — левый гонопод, соответственно изнутри и сбоку. Масштаб: 1,0 (14–17) и 0,2 мм (18, 19). Обозначения объяснены в тексте.

rugulose below paraterga. Axial line missing. Transverse metatergal sulcus rather superficial, visible on segments 5–18, nearly reaching bases of paraterga (Fig. 14). Tergal setae medium-sized, usually ca ¼ the length of metatergum, mostly abraded, but pattern on postcollum segments traceable as 1+1 setae in a transverse pre-sulcus row (Fig. 14), plus sometimes a midway seta dorsally on callus. Stricture dividing pro- and metazonae deep and rather broad, clearly ribbed at bottom down to well below paraterga (Figs 10, 14). Pleurosternal carinae traceable as a small lobule only on each side of segment 2, thereafter wanting. Epiproct (Figs 13, 15) short, truncate at apex, subapical lateral papillae evident and rather well removed from tip. Hypoproct (Fig. 16) nearly semi-circular, caudal 1+1 setae clearly separated, borne on minute knobs, these being slightly removed from caudal margin.

Sterna without modifications, cross-impressions faint. A single, narrowly truncated, setose lobe between ♂ coxae 4 (Fig. 17). ♂ legs very long and slender, ca 1.9–2.1 times as long as midbody height, prefemora not swollen laterally, femora clearly longest (Figs 10, 14); adenostyles wanting; ♂ tarsal brushes gradually thinning out already towards leg-pair 5.

Gonopods (Figs 18, 19) simple; coxites rather short, subcylindrical, densely setose distodorsally; telopodite rather stout and suberect; prefemoral (= densely setose) region about half as long as acropodite, the latter's femoral part twisted, deeply bifurcate distally, split into a shorter, simpler, spiniform, but prominent, distal, dorsomesal branch (**c**) and a longer, even more prominent, but terminally retrose and acuminate solenomere (**sl**).

REMARKS. The Oriental genus *Substrongylosoma* Golovatch, 1984, has hitherto been known to en-



Figs 20–23. *Substrongylosoma exiguum* sp.n., ♂ paratype. 20 — habitus, lateral view; 21–23 — anterior, middle and posterior parts of body, respectively, dorsal views. Pictures by K. Makarov, taken not to scale.

Рис. 20–23. *Substrongylosoma exiguum* sp.n., паратип ♂. 20 — общий вид, сбоку; 21–23 — соответственно передняя, средняя и задняя части тела, сверху. Фотографии К. Макарова, без масштаба.

compass only five species ranging from the Himalayas of Nepal and India to southern Thailand [Golovatch, 1984, 1993]. Using the available key [Golovatch, 1993], *S. bifurcatum* sp.n. keys out to *S. schawalleri* Golovatch, 1993, also from eastern Nepal, but differs in the smaller body (width < 1.0 mm), the presence of a sternal lobe between ♂ coxae 4 (Fig. 17) and the much more prominent distogonofemoral process **c** (Figs 18, 19).

Substrongylosoma exiguum sp.n.

Figs 20–28.

HOLOTYPE ♂ (ZMUM ρ2697), Nepal, Bhojpur Distr., valley NW of Phedi, 1900 m a.s.l., mixed broadleaved forest with *Alnus*, 26.05.1997, leg. W. Schawaller.

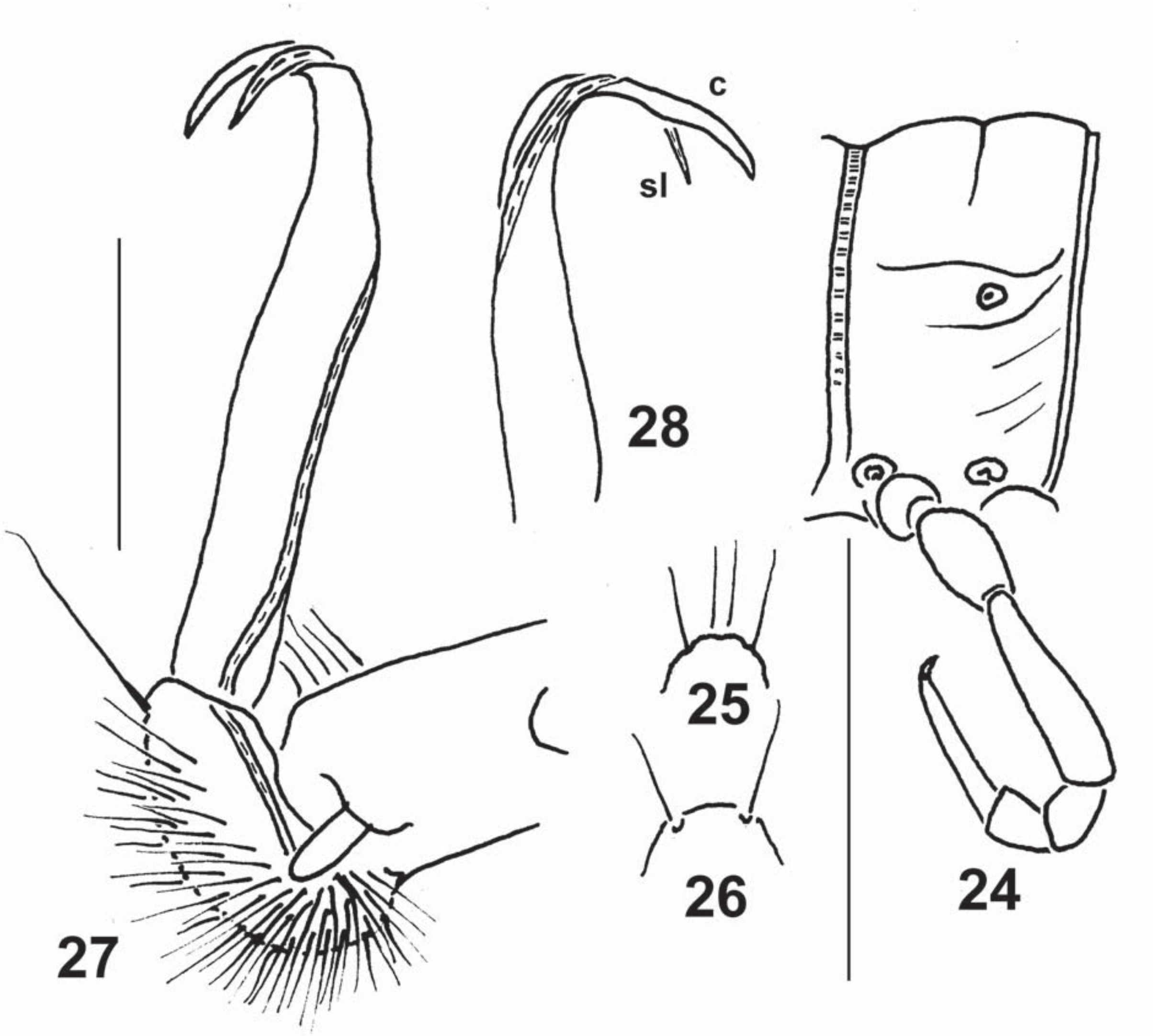
PARATYPES: 1 ♂, 1 ♀ (ZMUM ρ2698), same data, together with holotype.

DIAGNOSIS. Differs from congeners except *S. bifurcatum* sp.n. by the particularly small size (length ca 10 mm), from all congeners in the slender, only distally curved and bifid gonopod, in which a flagelliform process **c** is slightly longer than a similarly spiniform solenomere [see Golovatch, 1993].

NAME. To emphasize the small size; adjective.

DESCRIPTION. Length ca 10.5 (♂♂) or 10.0 mm (♀), maximum width (on head) 1.0 mm, of midbody pro- and metazonae 0.8 and 0.9 mm, respectively (♂), or 0.9 and 1.0 mm on midbody pro- and metazonae, respectively (♀). General coloration in alcohol light yellow- to red-brown, venter and legs slightly paler, antennomere 7 brown (Figs 20–23).

All characters as in *S. bifurcatum* sp.n., except as follows.

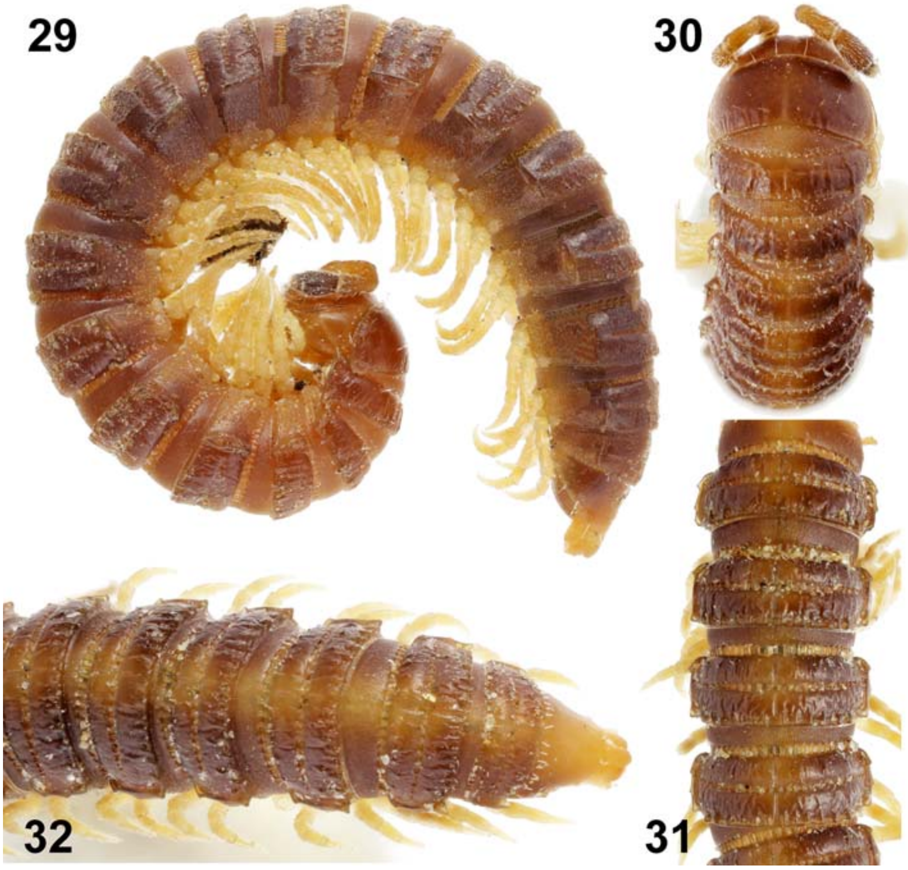


Figs 24–28. *Substrongylosoma exiguum* sp.n., ♂ paratype. 24 — left half of metazonite 10, lateral view; 25 — epiproct, dorsal view; 26 — hypoproct, ventral view; 27, 28 — right gonopod, mesal and lateral views, respectively. Scale bars: 1.0 (24–26) & 0.2 mm (27, 28). Designations explained in text.

Рис. 24–28. *Substrongylosoma exiguum* sp.n., паратип ♂. 24 — левая половина метазонита 10, сбоку; 25 — эпипрокт, сверху; 26 — гипопрокт, снизу; 27, 28 — правый гонопод, соответственно изнутри и сбоку. Масштаб: 1,0 (24–26) и 0,2 мм (27, 28). Обозначения объяснены в тексте.

Body moniliform (Figs 20–24). Antennae poorly clavate, slender and long, not modified, slightly extending back behind segment 3 (♂) or 2 (♀) when stretched dorsally. In width, ♂ segment 3 = 4 < 2 < collum = segments 5–16 < head; body gradually tapering starting with segment 17 (Figs 20–23), ♀ head = segments 5–16. Lateral calluses on postcollum paraterga very clearly delimited by a complete deep sulcus dorsally and, to a lesser degree, ventrally in caudal half only. Ozopores lateral, each lying inside a round pit ca $^{1}/_{3}$ of callus length in front of caudal corner (Figs 20, 24). Body surface smooth and shining, faintly rugulose below paraterga. Axial line often traceable in rear halves of postcollum metaterga. Transverse metatergal sulcus rather superficial, visible on segments 4–18 (♂) or 5–17 (♀), nearly reaching bases of paraterga (Figs 20–24). Tergal setae medium-sized, usually ca ¼ the length of metatergum, mostly abraded, but pattern on postcollum segments traceable as 1+1 setae in a transverse pre-sulcus row. Stricture dividing pro- and metazonae rather deep and broad, clearly ribbed at bottom down to below paraterga (Figs 20–24). Epiproct (Figs 23, 25) short, truncate at apex, subapical lateral papillae small and placed close to tip. Hypoproct (Fig. 26) nearly semi-circular, caudal 1+1 setae clearly separated, lying close to caudal margin, not borne on knobs.

A lobe between ♂ coxae 4 wanting. Legs long and slender, ca 1.8–2.0 (♂) or 0.9–1.0 times (♀) as long as midbody height, prefemora not swollen laterally, fem-



Figs 29–32. *Pocockina schawalleri* sp.n., ♂ paratypes. 29 — habitus, lateral view; 30–32 — anterior, middle and posterior parts of body, respectively, dorsal views. Pictures by K. Makarov, taken not to scale.

Рис. 29–32. *Pocockina schawalleri* sp.n., паратипы ♂♂. 29 — общий вид, сбоку; 30–32 — соответственно передняя, средняя и задняя части тела, сверху. Фотографии К. Макарова, без масштаба.

ora clearly longest (Figs 20, 24); neither adenostyles nor tarsal brushes.

Gonopods (Figs 27, 28) simple; coxites rather short, subcylindrical, setose distodorsally; telopodite rather long and slender, curved mesad only in distal ¼; prefemoral region nearly $^{1}/_{3}$ as long as acropodite, the latter's femoral part only slightly twisted, bifurcate only distally, split into a longer, simple, spiniform, distolateral branch (**c**) and a shorter, similarly spiniform solenomere (**sl**).

REMARK. Using the still available key [Golovatch, 1993], *S. exiguum* sp.n. keys out to *S. schawalleri* Golovatch, 1993, also from eastern Nepal, but differs from all congeners in the distogonofemoral process **c** being somewhat longer than a short, simple and similarly spiniform solenomere (**sl**) (Figs 27, 28).

Pocockina schawalleri **sp.n.**
Figs 29–39.

HOLOTYPE ♂ (ZMUM ρ2695), Nepal, Chitwan Distr., Chitwan National Park, Sauraha, 150 m a.s.l., edge of primary lowland *Shorea* forest, 31.05– 4.06.1997, leg. W. Schawaller.

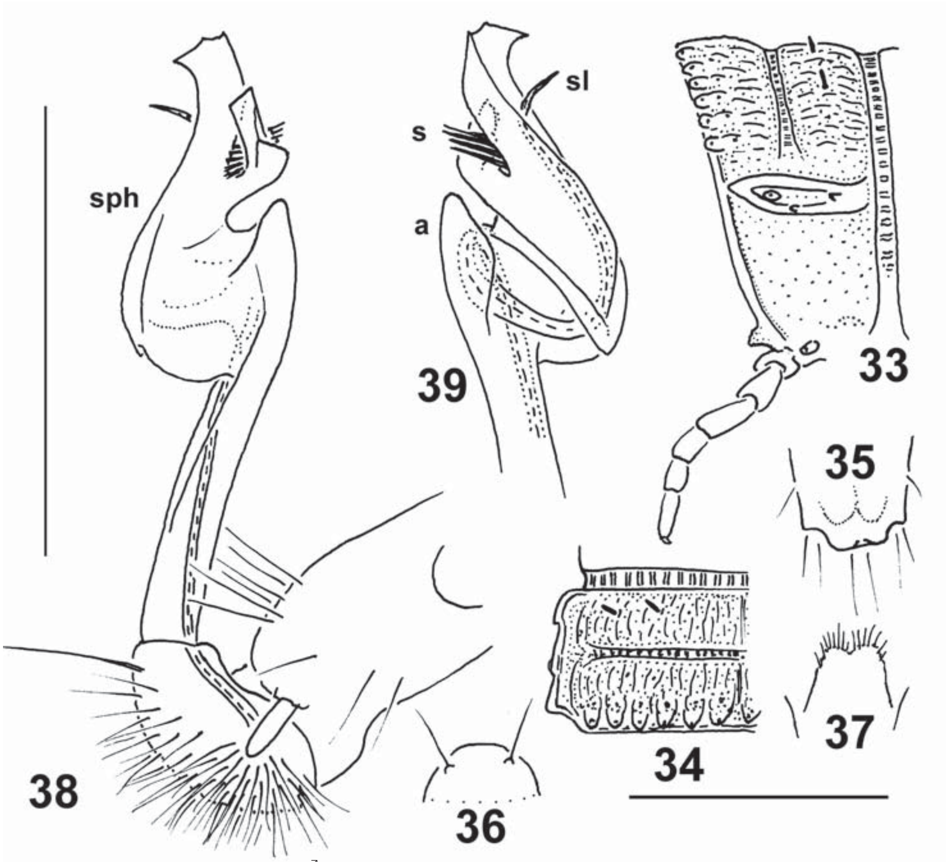
PARATYPES: 3 ♂♂, 10 ♀♀ (ZMUM ρ2696), 1 ♂ (SMF), same data, together with holotype.

DIAGNOSIS. Differs from *P. pilifera* (Pocock, 1895), from Myanmar, the only congener known to date, by the clearly rugose metaterga, the strongly developed pleurosternal carinae, the absence of an adenostyle on ♂ femur 1, and the much larger solenophore (**sph**) [cf. Jeekel, 1965].

NAME. Honours Wolfgang Schawaller, the collector.

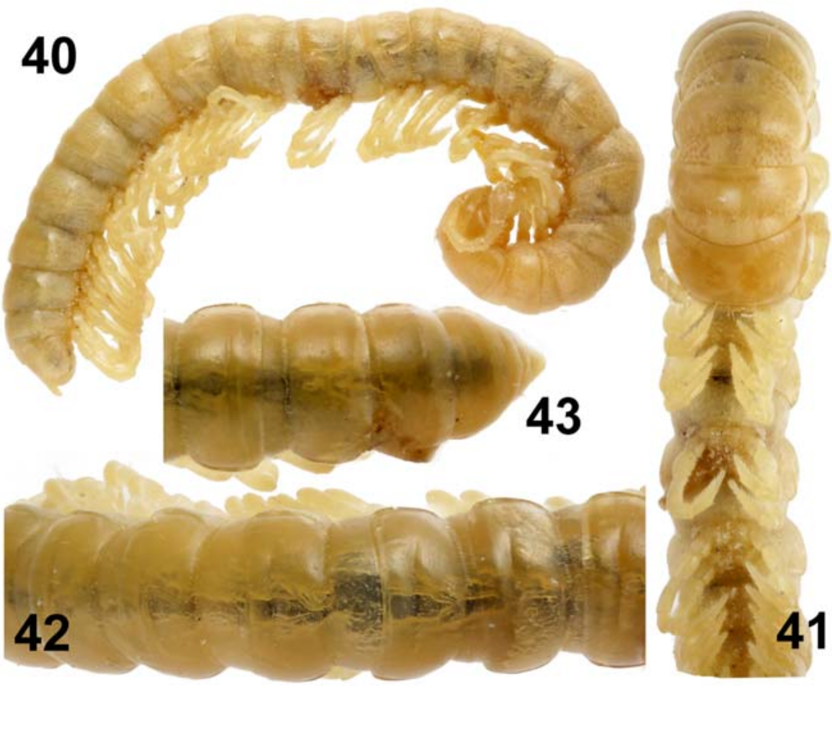
DESCRIPTION. Length ca 12–15 mm in both sexes, width of midbody pro- and metazonae 1.3–1.4 and 1.6–1.7 (♂) or 1.4–1.7 and 1.6–1.9 mm (♀), respectively. Holotype ca 13 mm long, 1.3 and 1.6 mm wide on midbody pro- and metazonae, respectively. General coloration in alcohol from light yellowish with nearly pallid legs to brown with light yellow-brown legs and epiproct (Fig. 29); postcollum terga in darker specimens with a broad, light yellow-brown, sometimes rather vague, axial stripe about $^{1}/_{3}$ as wide as terga (Figs 30–32); antennomere 6 and, especially, 7th infuscate, brown to dark brown; tips of antennae pallid.

In width, segment 3 = 4 < head = collum < 2 < 5–16; thereafter body gradually tapering towards telson.



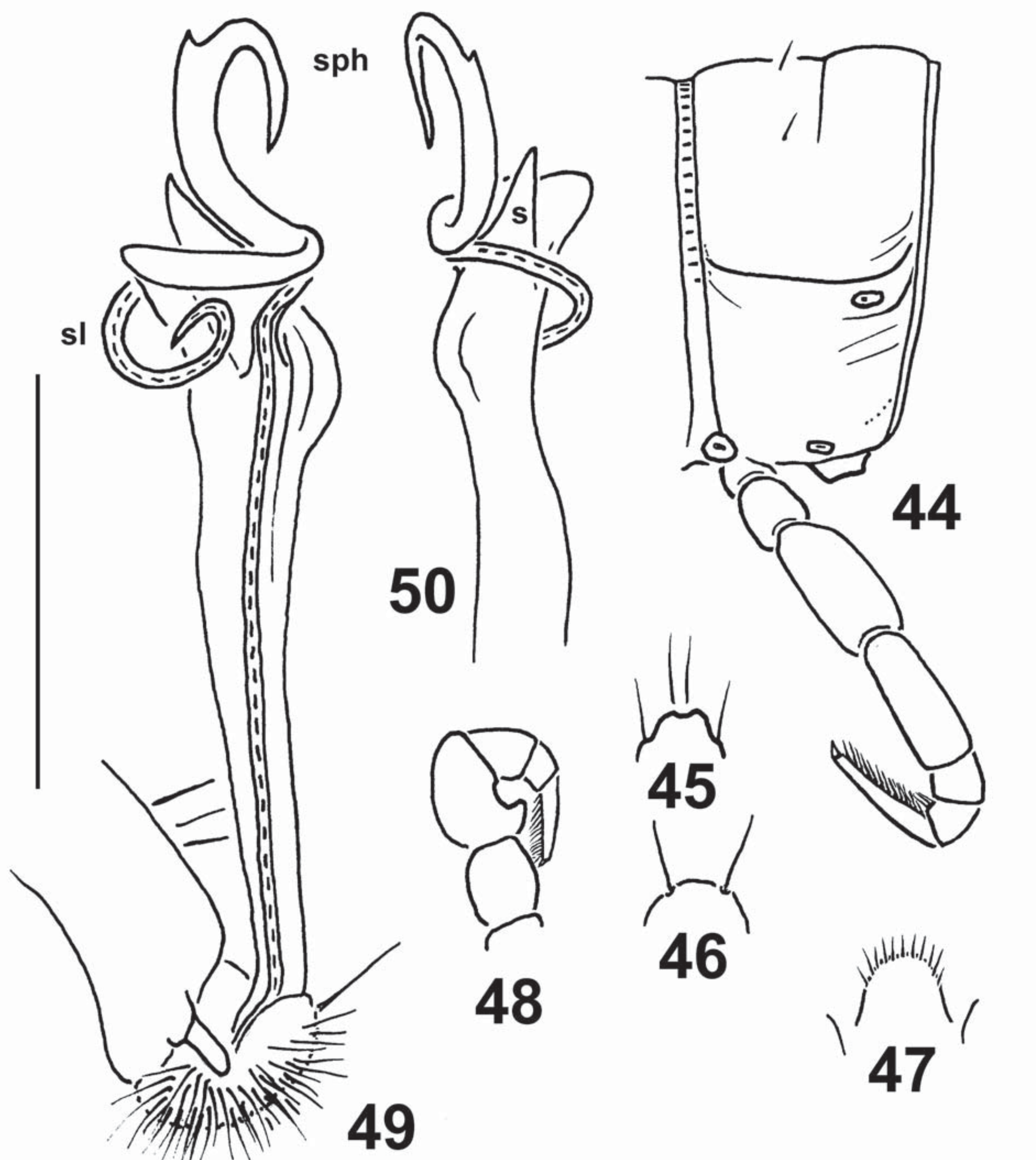
Figs 33–39. *Pocockina schawalleri* sp.n., ♂ paratype. 33 — right half of metazonite 10, lateral view; 34 — left half of metazonite 10, dorsal view; 35 — epiproct, dorsal view; 36 — hypoproct, ventral view; 37, 38 — right gonopod, mesal and lateral views, respectively. Scale bars: 1.0 (33–36) & 0.5 mm (37, 38). Designations explained in text.

Рис. 33–39. *Pocockina schawalleri* sp.n., паратип ♂. 33 — правая половина метазонита 10, сбоку; 34 — левая половина метазонита 10, сверху; 35 — эпипрокт, сверху; 36 — гипопрокт, снизу; 37, 38 — правый гонопод, соответственно изнутри и сбоку. Масштаб: 1,0 (33–36) и 0,5 мм (37, 38). Обозначения объяснены в тексте.



Figs 40–43. *Beronodesmoides longifemoratus* sp.n., ♂ paratype. 40 — habitus, lateral view; 41–43 — anterior, middle and posterior parts of body, respectively, dorsal views. Pictures by K. Makarov, taken not to scale.

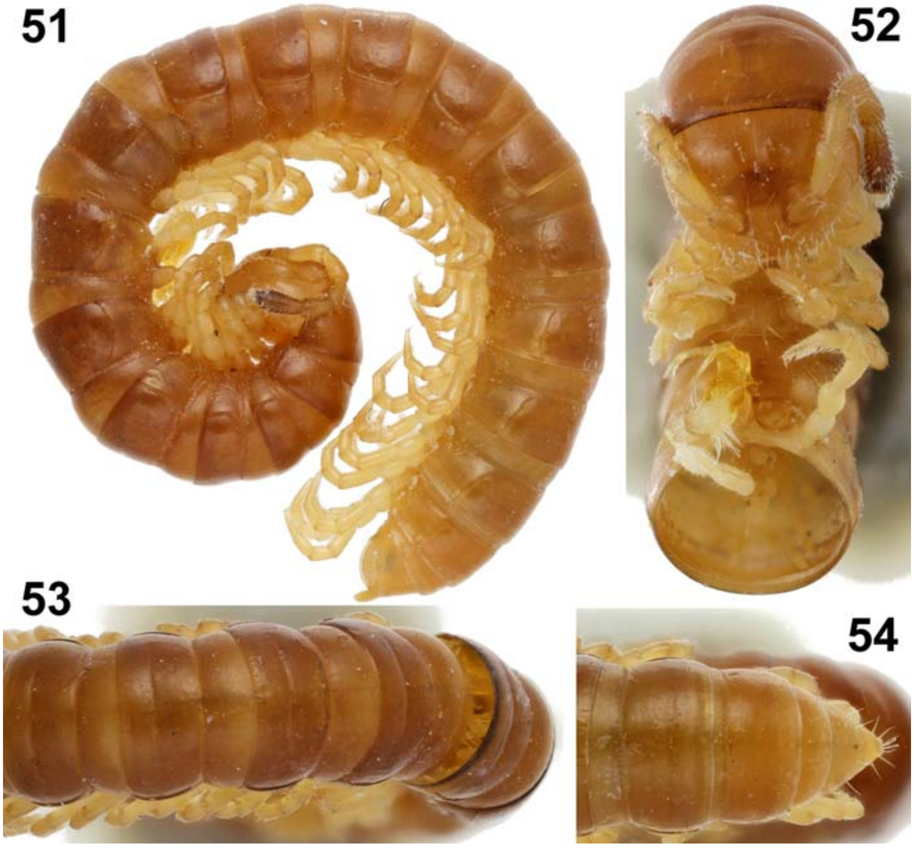
Рис. 40–43. *Beronodesmoides longifemoratus* sp.n., паратип ♂. 40 — общий вид, сбоку; 41–43 — соответственно передняя, средняя и задняя части тела, сверху. Фотографии К. Макарова, без масштаба.



Figs 44–50. *Beronodesmoides longifemoratus* sp.n., ♂ paratype. 44 — left half of metazonite 10, lateral view; 45 — epiproct, dorsal view; 46 — hypoproct, ventral view; 47 — sternal lobe between coxae 4, caudal view; 48 — leg 1, lateral view; 49, 50 — left gonopod, mesal and lateral views, respectively. Scale bars: 1.0 (44–48) & 0.5 mm (49, 50). Designations explained in text.

Рис. 44–50. *Beronodesmoides longifemoratus* sp.n., паратип ♂. 44 —левая половина метазонита 10, сбоку; 45 —эпипрокт, сверху; 46 — гипопрокт, снизу; 47 — стернальная пластина между тазиками 4, сзади; 48 — нога 1, сбоку; 49, 50 — левый гонопод, соответственно изнутри и сбоку. Масштаб: 1,0 (44–48) и 0,5 мм (49, 50). Обозначения объяснены в тексте.

Clypeolabral region densely setose, vertigial one nearly bare. Antennae short and clavate, clearly compressed on sides, reaching back behind (♂) or until midway of collum (♀) when stretched dorsally; in length, antennomeres 2=6 > 3=5 > 1=7; interantennal isthmus about as wide as diameter of antennal socket. Collum smooth, with a row of 11–12+11–12 long setae just behind fore margin, ventralmost 5+5 ones being placed on paraterga, often abraded, but traceable due to insertion points; middle and caudal rows of setae confused, the latter

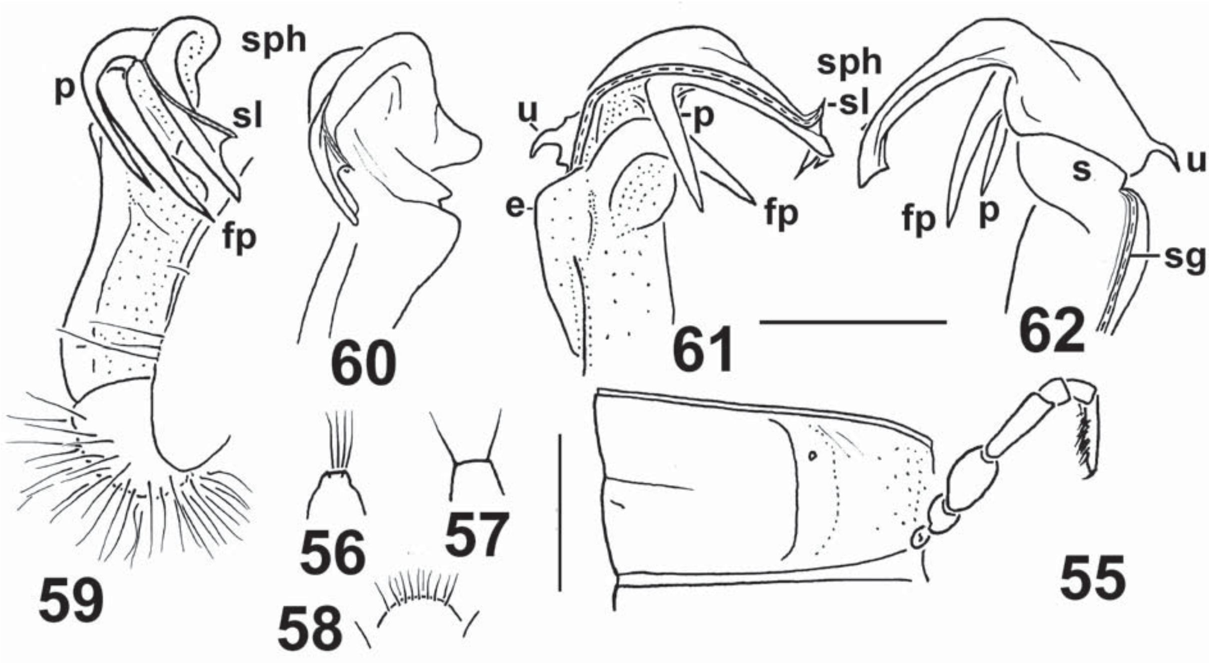


Figs 51–54. *Anoplodesmus spinosus* sp.n., ♂ holotype. 51 — habitus, lateral view; 52–54 — anterior, middle and posterior parts of body, respectively, dorsal views. Pictures by K. Makarov, taken not to scale.

Рис. 51–54. *Anoplodesmus spinosus* sp.n., голотип ♂. 51 — общий вид, сбоку; 52–54 — соответственно передняя, средняя и задняя части тела, сверху. Фотографии К. Макарова, без масштаба.

row with 6–7+6–7 setae (Fig. 30); paraterga on collum narrowly rimmed, caudal corner subrectangular and rather broadly rounded (Fig. 29). Postcollum paraterga set at about half of body height, rather poorly developed, caudally increasingly sharp teeth/spines largely not projecting behind rear margin (Figs 29–34), only paraterga 2 drawn clearly both anteriorly and posteriorly beyond margins (Fig. 29). Lateral calluses on paraterga narrow, mostly with two setigerous incisions/teeth, only slightly thicker on pore-bearing segments, very clearly delimited by a complete deep sulcus both dorsally and ventrally, excavate laterally to harbour a fully lateral ozopore inside a strongly elongate groove at about $^{1}/_{3}$ of paratergal extent in front of caudal corner (Figs 29, 33). Body surface mostly shining, but postcollum metaterga clearly rugose with a distinct axial line on both halves (Figs 30–32, 34), microgranulate below paraterga; caudal margin of metaterga with evident, slightly elevated, oblong, setigerous ribs, 3(4)+3(4) on metatergum 2, gradually growing up to 7(8)+7(8) on metatergum 18, small and rather inconspicuous on 19th (Figs 29–34). Transverse metatergal sulcus very distinct, deep, reaching bases of paraterga, ribbed at bottom, present on segments 3–19 (Figs 29–34). Tergal setae on collum as long as only on segment 2, thereafter increasingly short, mostly abraded, but at least caudalmost row easily traceable due to insertion points; setae usually arranged in two transverse rows: pattern as 3(4)+3(4) in fore (= pre-sulcus) row, gradually increasing up to 7(8)+7(8) in caudal row on metaterga 18 and 19; in posterior $^{1}/_{3}$–¼ of body, metaterga usually with 2+2 transverse rows of setae (two pre- and two post-sulcus ones), each of those intermediate rows being composed of up to 4(5)+4(5) setae. Stricture dividing pro- and metazonae deep and rather broad, clearly ribbed at bottom down to well below paraterga (Figs 29–34). Pleurosternal carinae prominent and roughly textured, a little more strongly developed in ♂ compared to ♀, an evident lobe only in segment 2, arcuate complete ridges until segment 6, thereafter subdivided into a fore bulge and a caudal rounded tooth mostly clearly drawn behind rear tergal margin, this tooth being traceable until segment 18. Epiproct (Figs 29, 32, 35) long, digitiform, unusually massive, subapical lateral and dorsal papillae prominent and only slightly removed from tip. Hypoproct (Fig. 36) semi-circular, caudal 1+1 setae clearly separated, slightly removed from caudal margin and borne on minute knobs.

A single, emarginate, setose lobe between ♂ coxae 4 (Fig. 37). Legs short and slender, ca 0.9–1.0 (♂) or



Figs 55–62. *Anoplodesmus spinosus* sp.n., ♂ holotype. 55 — left half of metazonite 10, lateral view; 56 — epiproct, dorsal view; 57 — hypoproct, ventral view; 58 — sternal lobe between coxae 4, caudal view; 59–62 — left gonopod, lateral, dorsolateral, ventral and dorsal views, respectively. Scale bars: 0.5 (55–58) & 0.3 mm (59–62). Designations explained in text.

Рис. 55–62. *Anoplodesmus spinosus* sp.n., голотип ♂. 55 —левая половина метазонита 10, сбоку; 56 —эпипрокт, сверху; 57 — гипопрокт, снизу; 58 — стернальная пластина между тазиками 4, сзади; 59–62 — левый гонопод, соответственно сбоку, одновременно сверху и сбоку, снизу и сверху. Масштаб: 1,0 (55–58) и 0,3 мм (59–62). Обозначения объяснены в тексте.

0.7–0.8 times (♀) as long as midbody height (Figs 29, 33); prefemora not swollen laterally, femora longest; adenostyles on ♂ femora 1 absent; ♂ tarsal brushes gradually thinning out towards legs 7.

Gonopods (Figs 38, 39) complex, telopodite elongate and suberect; coxite medium-sized, subcylindrical, rather densely setose distally; prefemoral (= densely setose) part short, about half the length of femorite; the latter simple, slender, not enlarged distad, showing a vague, ventral, longitudinal impression to support the seminal groove, set off well before an apical lobe (**a**) from a massive, ventral, laminar, membranous, clearly twisted solenophore (**sph**) near base of a long, flagelliform, loop-shaped solenomere (**sl**), the latter lying mostly concealed inside **sph** which is about half as high as femorite and shows a subapical row of conspicuous, stiff, setoid filaments (**s**) opposite an exposed **sl** tip.

REMARKS. *Pocockina* Jeekel, 1965, has hitherto remained monotypic [Jeekel, 1965], *P. schawalleri* sp.n. only slightly extending the known distribution of the genus to the Himalayas of Nepal in the west. Jeekel's [1965] question as to how far *Pocockina* is distinguished from *Delarthrum* Attems, 1936, a large, mostly Indian genus which currently encompasses 53 species [Golovatch, 2015], can now be answered. The differences are reduced to only a couple of characters in gonopod structure alone, these concerning the remarkably sharp bend laterad of a long and flagelliform solenomere and a similarly strong shift laterad of a complex, boat-shaped, laminar and membranous solenophore.

Beronodesmoides longifemoratus **sp.n.**
Figs 40–50.

HOLOTYPE ♂ (ZMUM ρ2690), Nepal, Solukhumbu Distr., Sanam, 2700–2800 m a.s.l., primary montane forest with *Quercus*, *Rhododendron* etc., 22–23.05.1997, leg. W. Schawaller.

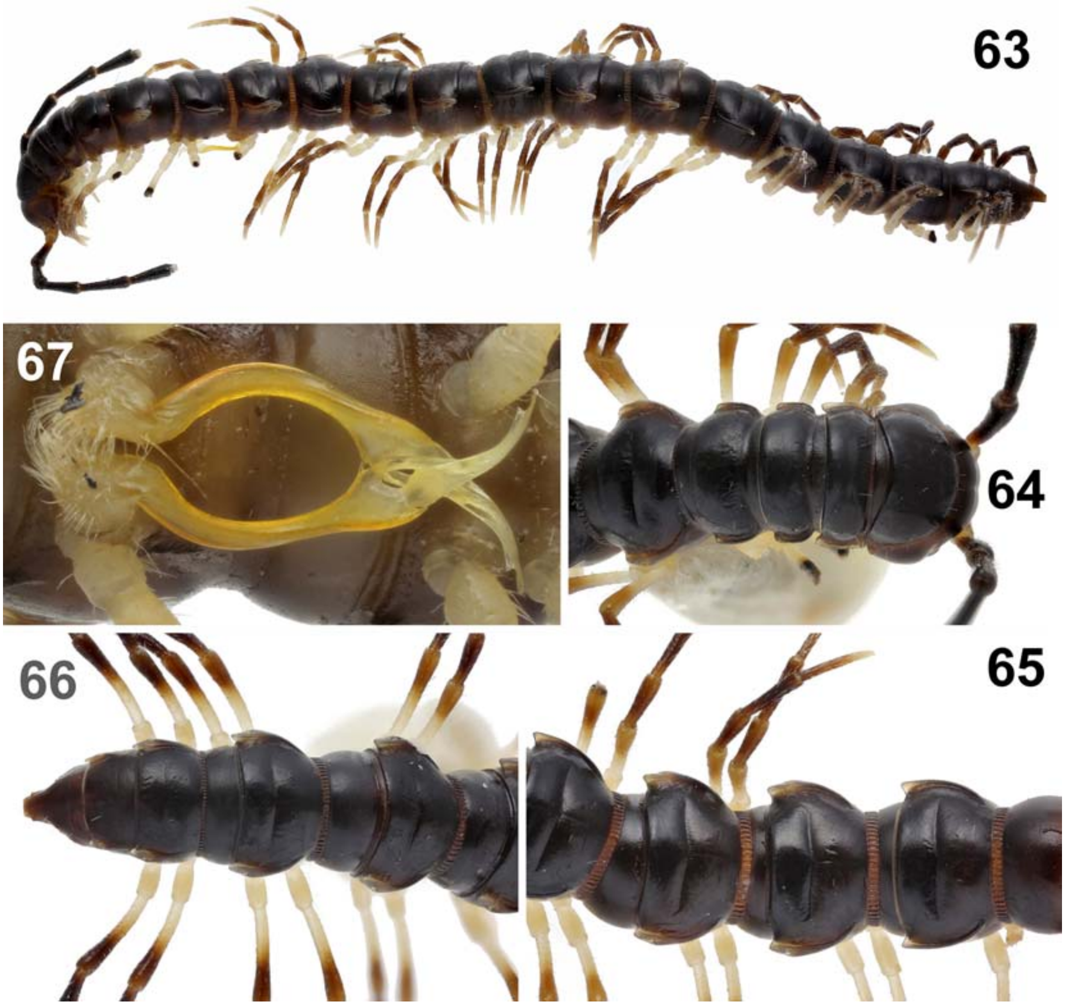
PARATYPES: 1 ♂, 2 ♀♀ (ZMUM ρ2691), 1 ♂ (SMF), same data, together with holotype.

DIAGNOSIS. Differs from all three *Beronodesmoides* known to date by the especially long and slender gonopod femorite which is more than twice as long as the acropodite, coupled with a particularly short and stout spine **s** at the base of the solenophore (**sph**).

NAME. To emphasize the especially long and slender gonopod femorite; adjective.

DESCRIPTION. Length ca 11–12 mm in both sexes, width of midbody pro- and metazonae 0.9–1.0 (♂) or 1.4 mm (♀), 1.1–1.2 (♂) or 1.6 mm (♀), respectively. Holotype ca 11 mm long, 0.9 and 1.1 mm wide on midbody pro- and metazonae, respectively. General coloration in alcohol light yellowish with olive tint, only anterior ¼ body slightly reddish brown; legs pallid to light yellowish (Figs 40–43).

In width, segment 3 = 4 < head = collum < 2 = 5–16; body gradually tapering towards telson thereafter. Clypeolabral region rather densely, vertigial one poorly, setose. Antennae (Figs 40, 41) short and slightly clavate, reaching back behind segment 2 (♂) or collum (♀) when stretched dorsally; in length, antennomeres 2=6 > 3=5 > 1=7; interantennal isthmus about as wide as diameter of antennal socket. Collum smooth, with a row of 4+4 long setae just behind fore margin (Fig.



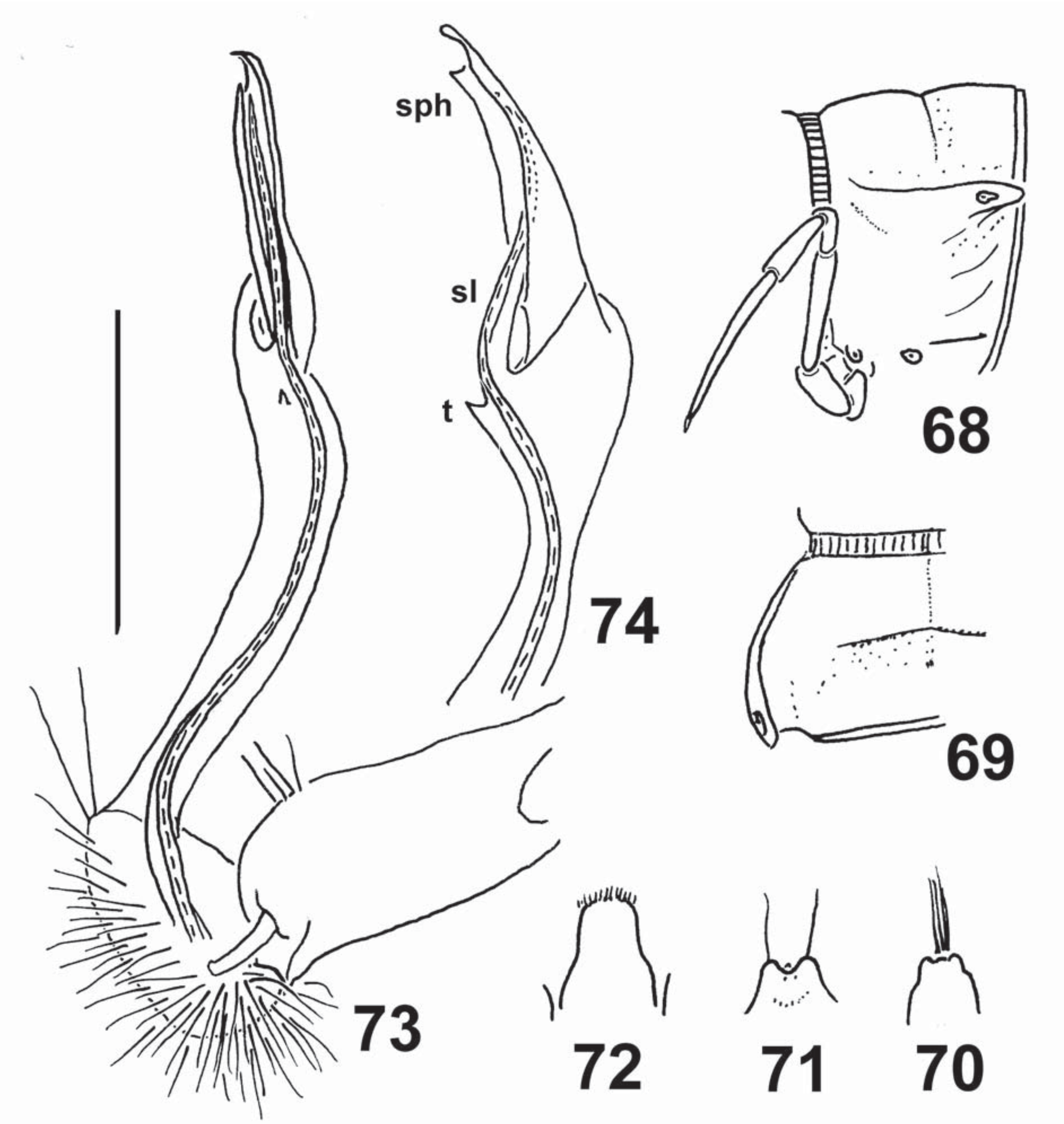
Figs 63–67. *Dajakina kompantsevi* sp.n., ♂ paratype. 63 — habitus, sublateral view; 64–66 — anterior, middle and posterior parts of body, respectively, dorsal views; 67 — gonopods in situ, ventral view. Pictures by K. Makarov, taken not to scale.

Рис. 63–67. *Dajakina kompantsevi* sp.n., паратип ♂. 63 — общий вид, сбоку; 64–66 — соответственно передняя, средняя и задняя части тела, сверху; 67 — гоноподы на месте, снизу. Фотографии К. Макарова, без масштаба.

41); paraterga on collum narrowly rimmed, caudal corner broadly and regularly rounded (Fig. 40). Postcollum paraterga set at about half of body height, poorly developed, never projecting behind rear margin (Fig. 40). Lateral calluses on paraterga narrow, smooth, somewhat thicker on pore-bearing segments, very clearly delimited by a complete, arcuate, deep sulcus only dorsally; a fully lateral ozopore inside an ovoid groove at about $^{1}/_{3}$ of paratergal length in front of caudal corner (Figs 40, 44). Body surface shining, faintly rugulose only above and below paraterga in caudal half of metaterga (Fig. 44). Transverse metatergal sulcus poorly-developed, superficial, far from reaching bases of paraterga, visible on segments 5–17 (Figs 40, 42–34). Tergal setae mostly short and abraded, but a pattern of 2+2 setae in a transverse fore (= pre-sulcus) row traceable. Stricture dividing pro- and metazonae deep and rather broad, moderately striate at bottom down to paraterga (Fig. 44). Pleurosternal carinae a small lobe only in segment 2, an increasingly fine line until segment 6, absent thereafter. Epiproct (Figs 40, 43, 45) rather long, digitiform, slightly flattened dorsoventrally, subapical lateral and apical papillae small. Hypoproct (Fig. 46) semi-circular, caudal 1+1 setae clearly separated, lying at caudal margin and not borne on knobs.

A single, linguiform, high, setose lobe between ♂ coxae 4 (Fig. 47). Legs rather short, ca 1.2–1.3 (♂) or 0.9–1.0 times (♀) as long as midbody height (Figs 40, 41, 44); prefemora moderately swollen laterally, femora longest (Fig. 44); adenostyles on ♂ femora 1 prominent (Fig. 48); ♂ tibial brushes gradually thinning out towards legs of segment 14 or 15, ♂ tarsal brushes until legs of segment 16.

Gonopods (Figs 49, 50) rather complex, telopodite elongate and suberect; coxite medium-sized, subcylindrical, only poorly setose distally; prefemoral (= densely setose) part short, about 1/3 the length of femorite; the



Figs 68–74. *Dajakina kompantsevi* sp.n., ♂ paratype. 68, 69 — left half of metazonite 10, lateral and dorsal views, respectively; 70 — epiproct, dorsal view; 71 — hypoproct, ventral view; 72 — sternal lobe between coxae 4, caudal view; 73, 74 — right gonopod, mesal and dorsal views, respectively. Scale bars: 2.0 (68–72) & 0.75 mm (73, 74). Designations explained in text.

Рис. 68–74. *Dajakina kompantsevi* sp.n., паратип ♂. 68, 69 —левая половина метазонита 10, соответственно сбоку и сверху; 70 —эпипрокт, сверху; 71 — гипопрокт, снизу; 72 — стернальная пластина между тазиками 4, сзади; 73, 74 — правый гонопод, соответственно изнутри и сверху. Масштаб: 2,0 (68–72) и 0,75 мм (73, 74). Обозначения объяснены в тексте.

latter simple, very slender, untwisted, only slightly enlarged distad, about twice as long as acropodite; seminal groove running only on mesal face of femorite before passing onto a long, twisted, flagelliform solenomere (**sl**); a short, stout, lateral spine (**s**) at base of a twisted, mostly harpoon-shaped solenophore (**sph**).

REMARK. *Beronodesmoides* Golovatch, 2015, has hitherto been known to contain only three species, all from Nepal and all keyed [Golovatch, 2015].

Anoplodesmus spinosus **sp.n.**
Figs 51–62.

HOLOTYPE ♂ (ZMUM ρ2689), Nepal, Solukhumbu Distr., below Pangum, 2500 m a.s.l., open secondary mixed forest, rotten trunks of old trees, undergrowth with *Berberis*, *Mahonia*, *Rubus*, *Lycopodium*, 14–15.05.1997, leg. W. Schawaller.

DIAGNOSIS. Differs from congeners primarily by the solenomere (**sl**) and solenophore (**sph**) being directed laterad, as well as in certain details of **sph** structure.

NAME. To emphasize the strongly spinose solenophore; adjective.

DESCRIPTION. Length ca 13 mm, width of midbody pro- and metazonae 1.3 and 1.5 mm, respectively (♂). General coloration in alcohol uniformly marbled light red-brown to yellowish brown; antennae increasingly infuscate, brown to dark brown on antennomeres 6 and 7; vertigial region slightly infuscate, marbled brownish; clypeolabral region, anterior halves of prozonae, telson, legs and venter light yellowish; tips of antennae pallid (Figs 51–54).

In width, segment 3 = 4 < head = collum < 2 = 5–15; body gradually tapering towards telson thereafter. Clypeolabral region rather densely, vertigial one poorly, setose. Antennae (Figs 40, 41) short and slightly clavate, reaching back behind segment 2 (♂) when stretched dorsally; in length, antennomeres 2=6 > 3=5 > 1=7; interantennal isthmus about as wide as diameter of antennal socket (Fig. 52). Collum smooth, with a row of 4+4 long setae just behind fore margin and 1+1 setae centrally (Fig. 52); paraterga on collum narrowly rimmed, caudal corner broadly and regularly rounded. Postcollum paraterga set at about half of body height, poorly developed, never projecting behind rear margin (Figs 51–55). Lateral calluses on paraterga narrow, smooth, somewhat thicker on pore-bearing segments, very clearly delimited by a complete, arcuate, deep sulcus only dorsally; a fully lateral ozopore inside a shallow pit at about ¼ of paratergal length in front of caudal corner (Figs 51, 55). Body surface generally smooth and shining, faintly rugulose only above and, more usually, below paraterga in caudal half of metaterga; pleurosternal regions finely microgranulate (Figs 51–55). Transverse metatergal sulcus poorly-developed, superficial, far from reaching bases of paraterga, visible on segments 5–17 (Figs 51, 53–55). Tergal setae mostly short and abraded, but a pattern of 2+2 setae in a transverse fore (= pre-sulcus) row traceable; setae on collum slightly longer than those on following metazonae. Stricture dividing pro- and metazonae rather deep and broad, glabrous at bottom (Fig. 55). Pleurosternal carinae missing. Epiproct (Figs 51, 54, 56) rather long, digitiform, slightly flattened dorsoventrally, subapical lateral and apical papillae very small. Hypoproct (Fig. 57) subquadrate, caudal 1+1 setae clearly separated, lying at caudal margin and not borne on knobs.

A single, low, rounded, setose lobe between coxae 4 (Fig. 58). Legs rather short, ca 1.1–1.2 times as long as midbody height (♂) (Figs 51, 52, 55); prefemora moderately swollen laterally, femora longest (Fig. 55); adenostyles absent; ♂ tibial brushes gradually thinning out towards legs 7, tarsal brushes until legs of segment 14.

Gonopods (Figs 59–62) complex, telopodite rather short and stout; coxite long, nearly as long as telopodite, subcylindrical, poorly setose distolaterally; prefemoral (= densely setose) part short, about half the length of femorite; the latter simple, flattened laterally, untwisted, moderately, but clearly expanded apically on mesal face (**e**), on lateral side with a very long, slightly curved, spiniform, distofemoral process (**fp**), set off from acropodite = solenophore (**sph**) by a distinct sulcus (**s**); seminal groove (**sg**) running on mesal side of femorite, delimiting the latter's medial expansion (**e**) before moving onto a very long, flagelliform solenomere (**sl**); **sph** nearly as long as **sl**, long, slightly curved, coiled and directed laterobasad, membranous, supplied with a short uncus (**u**) on mesal side and a very long, straight, midway spine (**p**) on lateral face, **sph** tip recurved and subacuminate.

REMARKS. *Anoplodesmus* Pocock, 1895, is a large genus currently encompassing nearly 40 species or subspecies ranging from India and Sri Lanka in the west, through the Himalayas, to Taiwan, Indochina and West Malaysia [Nguyen & Sierwald, 2013; Golovatch, 2015]. A few larger species seem to be anthropochores, reaching Mauritius in the west and Fiji in the east [e.g. Golovatch & Stoev, 2013]. The genus contains two large groups of species, most of which are either large (30–50 mm long), with strongly developed paraterga and particularly simple gonopods (*Anoplodesmis* s.str.) or small (<20 mm long), with very poorly developed paraterga and complex to very complex gonopods (ex-*Paranedyopus* spp.) [Golovatch, 2000]. Because these groups are connected by a few intermediate links, they are considered congeneric. Most of the constituent species from both groups have been keyed [Jeekel, 1965; Golovatch, 1993].

Nepal supports species from both of these groups [Golovatch, 2015]. As regards the position of *A. spinosus* sp.n., it clearly joins the prevalent group of smaller species which demonstrate strongly reduced paraterga and highly complex gonopods. However, the new species shows an unusually strongly spinose solenophore which is coiled and directed laterobasally, also supporting a similarly long solenomere.

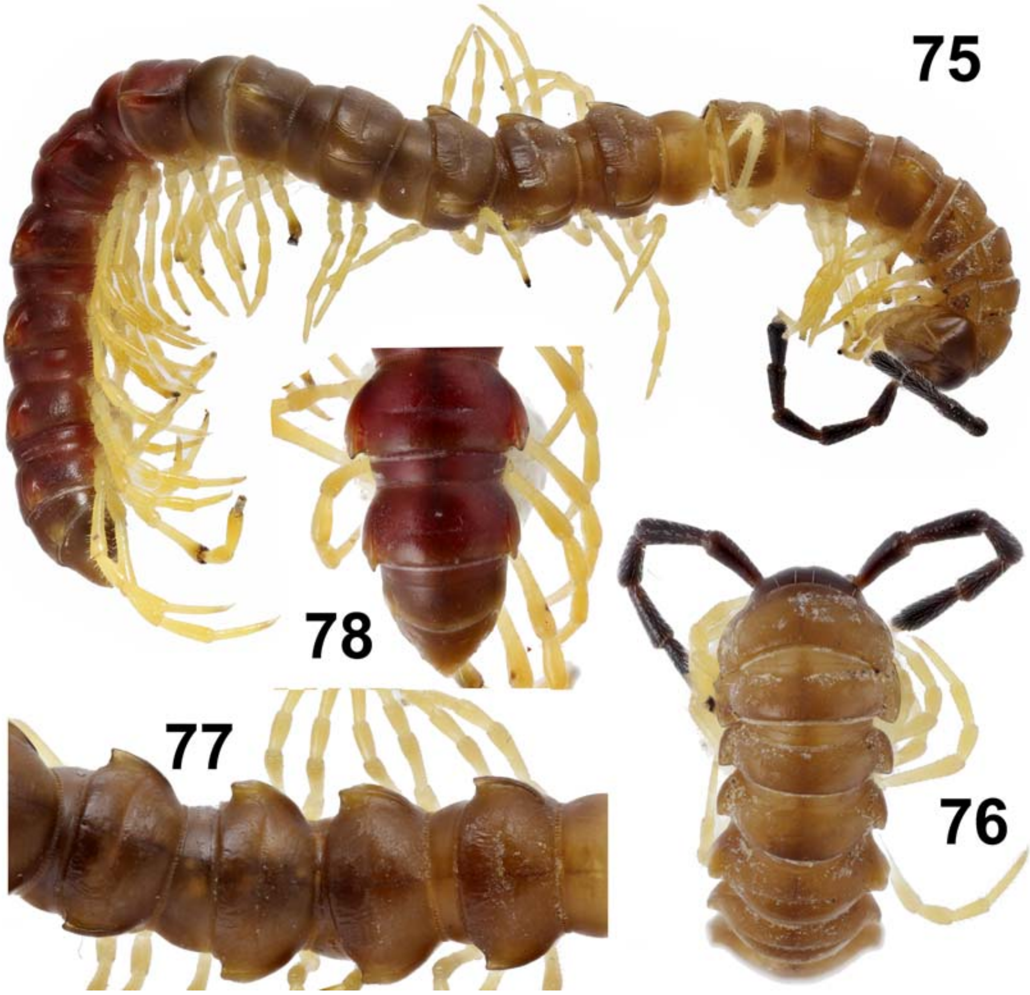
Dajakina kompantsevi **sp.n.**

Figs 63–74.

HOLOTYPE ♂ (ZMUM ρ2692), Indonesia, Sumatra, West Sumatra Prov., Maninjau, 00°17′09″S, 00°13′54″E, ca 500 m a.s.l., 18–19.XII.2014, leg. A. Kompantsev.

PARATYPES: 2 ♂♂ (ZMUM ρ2693), same locality, together with holotype.

DIAGNOSIS. Using the only available, and still valid, key to *Dajakina* species [Golovatch 1996a], the new species keys out to the sole Sumatran species, *D. inermis* (Silvestri, 1895). However, *D. kompantsevi* sp.n. differs by the presence of pleurosternal teeth on ♂ segments 2–7, versus arcuate lines, the transverse metatergal sulcus starting with segment 5, versus 2, the caudal corners of the paraterga being mostly narrowly rounded teeth, but neither sharp nor drawn clearly behind the rear tergal margin, versus largely sharp spines distinctly projecting beyond the rear tergal margin, coupled with the slightly stouter and more strongly bent gonopod telopodite [see Jeekel, 1979; Golovatch, 1996a].



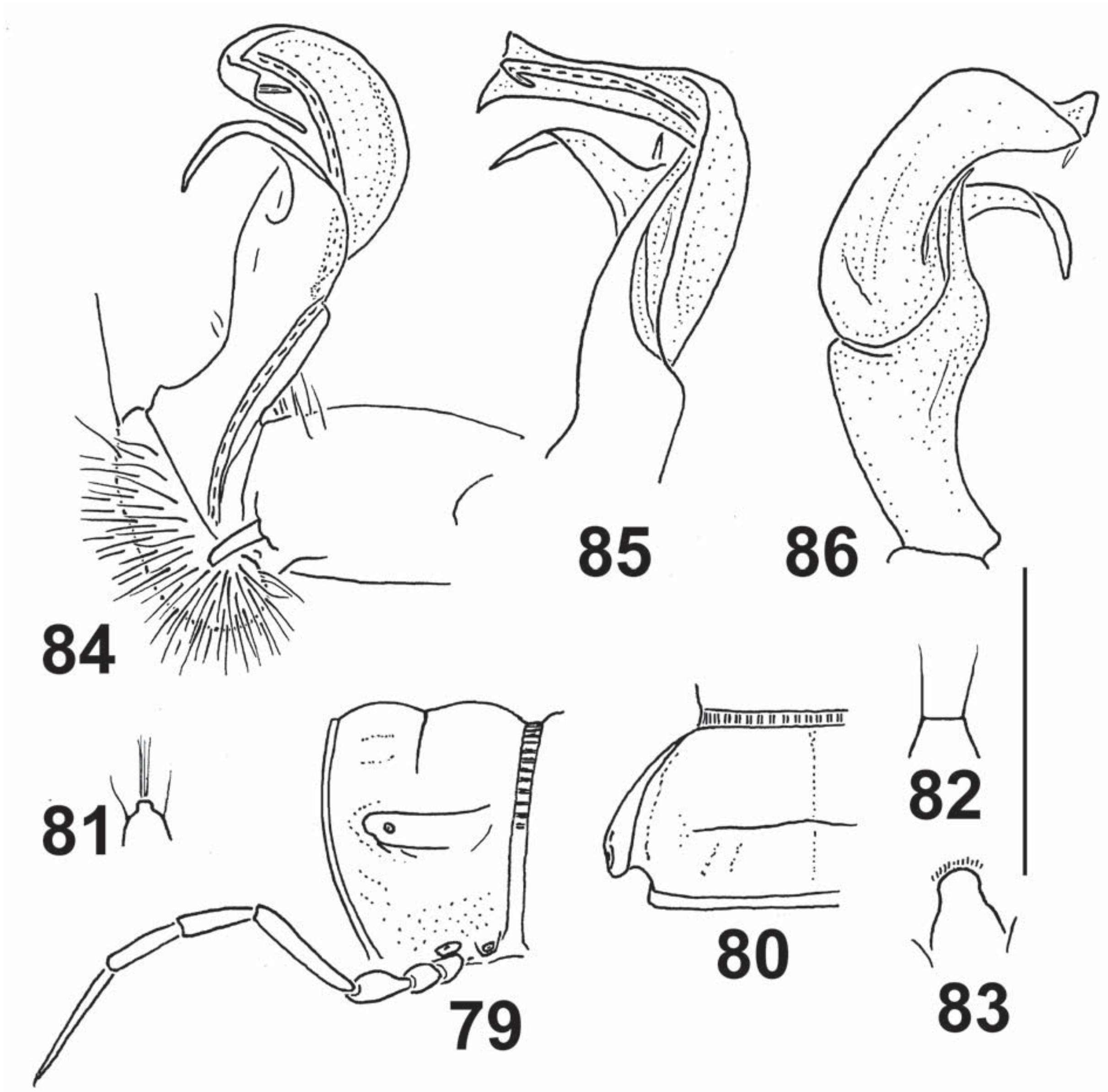
Figs 75–78. *Sundanina carnea* (Pocock, 1894), ♂ topotype. 75 — habitus, sublateral view; 76–78 — anterior, middle and posterior parts of body, respectively, dorsal views. Pictures by K. Makarov, taken not to scale.

Рис. 75–78. *Sundanina carnea* (Pocock, 1894), топотип ♂. 75 — общий вид, сбоку; 76–78 — соответственно передняя, средняя и задняя части тела, сверху. Фотографии К. Макарова, без масштаба.

NAME. Honours Aleksandr Kompantsev, the collector.

DESCRIPTION. Length ca 23–25 mm, width of midbody pro- and metazonae 1.5 and 2.0 mm, respectively (♂). General coloration in alcohol uniformly dark brown to blackish, but 2–3 basal podomeres, distal halves of tarsi, tips of antennae, clypeolabral region, venter and caudal $^{1}/_{3}$–¼ of paraterga pallid to light yellowish; stricture red-brown (Figs 63–66).

Body strongly moniliform due to very deep strictures between pro- and metazonae. In width, segment 3 = 4 < collum < head < 2 < 5–16; body gradually tapering towards telson thereafter. Clypeolabral region rather densely, vertigial one poorly, setose. Antennae (Fig. 63) very long and slender, reaching back behind segment 5 (♂) when stretched dorsally; antennomeres 2–6 subequal in length; interantennal isthmus about as wide as diameter of antennal socket. Collum smooth, with a row of 4+4 long setae just behind fore margin and 1+1 setae centrally, regardless of a midlength seta on each paratergum; the latter a narrowly rimmed flap, caudal corner subrectangular, rather narrowly rounded (Fig. 64). Postcollum paraterga set at about $^{1}/_{3}$ to half of body height, poorly developed, mostly narrowly rounded and beak-shaped, projecting behind rear margin only in segments 2 and 17–19 (Figs 64–69). Lateral calluses on paraterga narrow, smooth, somewhat thicker and slightly expanded laterad in front of ozopore on pore-bearing segments, very clearly delimited by a complete, arcuate, deep sulcus dorsally, only in about caudal $^{1}/_{3}$ by a rather vague ventral sulcus as well; a nearly fully lateral ozopore inside an ovoid groove at about ¼ of paratergal length in front of caudal corner (Figs 68, 69). Body surface generally smooth and shining, faintly rugulose only above and below paraterga in caudal half of metazonae; pleurosternal regions smooth (Figs 63, 65–69). Transverse metatergal sulcus poorly-developed, superficial, faintly punctured at bottom, slightly



Figs 79–86. *Sundanina carnea* (Pocock, 1894), ♂ topotype. 79 — right half of metazonite 10, lateral view; 80 — left half of metazonite 10, dorsal views; 81 — epiproct, dorsal view; 82 — hypoproct, ventral view; 83 — sternal lobe between coxae 4, caudal view; 84–86 — right gonopod, mesal, dorsal and lateral views, respectively. Scale bars: 2.0 (79–83) & 0.75 mm (84–86). Designations explained in text.

Рис. 79–86. *Sundanina carnea* (Pocock, 1894), топотип ♂. 79 — правая половина метазонита 10, сбоку; 80 — левая половина метазонита 10, сверху; 81 — эпипрокт, сверху; 82 — гипопрокт, снизу; 83 — стернальная пластина между тазиками 4, сзади; 84–86 — правый гонопод, соответственно изнутри, сверху и сбоку. Масштаб: 2,0 (79–83) и 0,75 мм (84–86). Обозначения объяснены в тексте.

not reaching bases of paraterga, visible on segments 5–18 (Figs 64–69). Tergal setae mostly short and abraded, but a pattern of 2+2 setae in a transverse fore (= pre-sulcus) row traceable; setae on collum slightly longer than those on following metaterga. Stricture dividing pro- and metazonae very deep and broad, very strongly ribbed at bottom (Figs 65, 68, 69). Axial line vestigial, best traceable on fore halves of metaterga, starting with segment 5 (Fig. 69). Pleurosternal carinae evident, sharp, caudal teeth gradually reduced towards segment 7 (♂), traceable as thin lines on a few following segments thereafter (Fig. 68). Epiproct (Figs 63, 66, 70) rather long, digitiform, slightly flattened dorsoventrally, subapical lateral and apical papillae very small. Hypoproct (Fig. 71) subtrapeziform, caudal 1+1 setae set on high rounded lobes, clearly separated, lying at caudal margin.

Sterna unmodified except for a high, linguiform, rounded, setose lobe between coxae 4 (♂) (Fig. 72). Cross-impressions evident, transverse sulci particular-

ly deep. Legs very long and slender, ca 3.0 times as long as midbody height (♂) (Figs 63, 68); prefemora not swollen laterally; in length, femora > tarsi > tibiae > postfemora > prefemora (Fig. 63); adenostyles absent; tarsal brushes present only in legs 1 and 2 (♂).

Gonopods (Figs 67, 73, 74) simple, telopodites long and slender, slightly and regularly curved, in situ crossing mesally; coxite long, nearly as long as telopodite, subcylindrical, poorly setose distoventrally; prefemoral (= densely setose) part short, about half the length of femorite; the latter simple, untwisted, moderately, but clearly expanded apically on dorsal face towards an oblique sulcus which demarcates a high and simple solenophore (**sph**); a small tooth (**t**) at base of a rather long, flagelliform solenomere (**sl**) which is mostly concealed at bottom of only a slightly longer and unequally and poorly bifid **sph**.

REMARKS. *Dajakina* Jeekel, 1963, is a rather small genus currently encompassing only five species, four from Borneo and one more from Sumatra, all keyed [Golovatch, 1996a]. So above is only the second congener to be found on Sumatra.

Sundanina carnea (Pocock, 1894)
Figs 75–86.

MATERIAL. 2 ♂♂ (ZMUM ρ2694), Indonesia, Sumatra, West Sumatra Prov., Lake Maninjau, above Bayur, 00°16′25″S, 100°11′14″E, ca 820 m a.s.l., 20–23.XII.2014, leg. A. Kompantsev.

REMARKS. This remarkable species has been reported from various parts of Sumatra [Pocock, 1894; Attems, 1935; Golovatch, 1995]. As Maninjau is one of the type localities, above are near-typotypes. Superficially, this species strongly resembles *Dajakina kompantsevi* sp.n., but differs readily through its mostly vividly red coloration which fades out in alcohol material, turming into coffee brown [Jeekel, 1979]. New illustrations are provided to demonstrate the species' identity (Figs 75–86).

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